

## CLAIMS

What is claimed is:

1 A method comprising:

2 identifying a failure within a first failed feature in a computer aided design (CAD)

3 assembly; and

4 automatically providing a first set of treatments for the failure within the first failed

5 feature from which to select, said first set of treatments based at least in part on the failure within

6 the first failed feature.

1 2. The method of claim 1 further comprising:

2 identifying failures within a plurality of additional failed features among a plurality of

3 features comprising the CAD assembly; and

4 automatically providing a plurality of respective sets of treatments for each failure within

5 the plurality of additional failed features from which to select, each of said plurality of respective

6 sets of treatments based at least in part on a corresponding failure.

1 3. The method of claim 1 wherein the identifying is based at least in part on error and/or warning

2 messages generated during execution of the CAD assembly.

1 4. The method of claim 1 further comprising:

2 generating a diagnosis object for each failed feature of the CAD assembly, each diagnosis

3 object comprising information to identify and/or illustrate at least one failure in a respective

4 failed feature.

5 storing each diagnosis object in persistent memory;

6 retrieving a diagnosis object from the persistent memory corresponding to the first failed  
7 feature based on an indication of the first failed feature; and  
8 providing information to identify and/or illustrate the failure in the first failed feature  
9 based on the diagnosis object corresponding to the first failed feature.

1 5. The method of claim 4 wherein the information comprises at least one of a CAD assembly  
2 identifier, a failure text description, a feature identifier, an instance transform, a feature  
3 geometry, a feature coordinate set, a failure result type, and a set of feature dependencies.

1 6. The method of claim 1 further comprising:  
2 receiving a selection indicating the first failed feature.

1 7. The method of claim 6 wherein receiving the selection comprises one of:  
2 receiving a pointer command from a browser that lists the first failed feature;  
3 receiving a toolbar command followed by a pointer indication in a list including the first  
4 failed feature; and  
5 receiving a menu command followed by a pointer indication in a list including the first  
6 failed feature.

1 8. The method of claim 6 further comprising:  
2 providing an indication of at least one primary failed feature if the first failed feature is a  
3 secondary failed feature; and  
4 providing an option to select from the at least one primary failed feature if the first failed  
5 feature is a secondary failed feature.

1 9. The method of claim 1 further comprising at least one of:

2 providing a detailed textual description of the failure within the first failed feature;

3 designating the first failed feature in a graphical representation of the CAD assembly;

4 stepping through execution of the CAD assembly; and

5 listing at least one feature upon which the first failed feature depends.

1 10. The method of claim 9 wherein providing the detailed textual description comprises at least  
2 one of:

3 providing an error and/or warning message corresponding to the failure within the first  
4 failed feature, said error and/or warning message being generated during execution of the CAD  
5 assembly;

6 providing an extended message from a data structure of extended messages based on the  
7 failure within the first failed feature; and

8 providing a calculated response based on a deviation of the failure within the first failed  
9 feature from acceptable values.

1 11. The method of claim 9 wherein designating the first failed feature comprises at least one of:

2 implementing a command to toggle highlighting of a representation of the first failed  
3 feature;

4 sonaring in on the representation; and

5 zooming in on the representation.

1 12. The method of claim 11 further comprising:

2 generating at least one of a set of at least one edge of the first failed feature, a set of at  
3 least one surface of the first failed feature, and a graphical error icon for use as the representation  
4 of the first failed feature, wherein the representation indicates where the first failed feature would  
5 have been generated in the CAD assembly.

1 13. The method of claim 9 wherein stepping through execution of the CAD assembly comprises  
2 at least one of:

3 executing only a next feature in the CAD assembly after receiving a next feature  
4 indication from a user;  
5 sequentially executing the CAD assembly at a reduced rate;  
6 pausing execution after each feature on which the first failed feature depends is executed;  
7 and  
8 designating only a most recently executed feature in the CAD assembly as the CAD  
9 assembly is executed.

1 14. The method of claim 1 further comprising:

2 receiving a selection indicating one of the first set of treatments; and  
3 automatically initiating the selected treatment.

1 15. The method of claim 14 wherein the first set of treatments comprises at least one of an edit  
2 treatment, a delete treatment, a suppress treatment, a reorder treatment, and a targeted edit  
3 treatment, and wherein automatically initiating the selected treatment comprises one of:

4 opening the user interface used to create the CAD assembly,

5 deleting the first failed feature from the CAD assembly;  
6 suppressing the first failed feature in the CAD assembly;  
7 moving the first failed feature to a different place in an execution sequence of the CAD  
8 assembly; and  
9 opening a reduced function user interface to edit a parameter of the first failed feature  
10 predicted to be responsible for the failure within the first failed feature.

1 16. The method of 15 wherein opening the user interface comprises at least one of:  
2 zooming in on coordinates of the first failed feature in the CAD assembly;  
3 designating the first failed feature in the CAD assembly; and  
4 rolling back execution of the CAD assembly to just before execution of the first failed  
5 feature.

1 17. The method of claim 15 wherein moving the first failed feature comprises one of:  
2 receiving a user indication of where the first failed feature should be move; and  
3 receiving a selection indicating a suggested location for the first failed feature.

1 18. The method of claim 15 wherein opening the reduced function user interface comprises:  
2 opening a parameter editing field; and  
3 suggesting a value and/or value range for the parameter.

1 19. The method of claim 1 wherein automatically providing the first set of treatments comprises:  
2 accessing a plurality of available treatments, each of said available treatments including a  
3 list of failures to which the respective treatment applies;

4 comparing the failure within the first failed feature to the list of failures for each of said  
5 available treatments; and  
6 adding treatments to the first set of treatments based on the comparing.

1 20. An apparatus comprising:

2 first logic to identify a failure within a first failed feature in a computer aided design  
3 (CAD) assembly; and

4 second logic to automatically provide a first set of treatments for the failure within the  
5 first failed feature from which to select, said first set of treatments based at least in part on the  
6 failure within the first failed feature.

1 21. The apparatus of claim 20 further comprising:

2 third logic to receive a selection indicating the first failed feature; and  
3 fourth logic to provide information to identify and/or illustrate the failure within the first  
4 failed feature.

1 22. The apparatus of claim 20 further comprising:

2 third logic to receive a selection indicating one of the first set of treatments; and  
3 fourth logic to automatically initiate the selected treatment.

1 23. A machine readable storage medium having stored thereon machine executable instructions,  
2 execution of said instructions to implement a method comprising:

3 identifying a failure within a first failed feature in a computer aided design (CAD)  
4 assembly; and

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5 automatically providing a first set of treatments for the failure within the first failed  
6 feature from which to select, said first set of treatments based at least in part on the failure within  
7 the first failed feature.

1 24. The machine readable storage medium of claim 23 having stored thereon machine  
2 executable instructions, execution of said instructions to implement the method further  
3 comprising:  
4 receiving a selection indicating the first failed feature; and  
5 providing information to identify and/or illustrate the failure within the first failed  
6 feature.

1 25. The machine readable storage medium of claim 23 having stored thereon machine  
2 executable instructions, execution of said instructions to implement the method further  
3 comprising:  
4 receiving a selection indicating one of the first set of treatments; and  
5 automatically initiating the selected treatment.